

PROJECT facts

DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY
FEDERAL ENERGY TECHNOLOGY CENTER

ADVANCED CLEAN/EFFICIENT
POWER systems

PS005.0697

MERCURY CONTROL WITH DRY CARBON-BASED SORBENTS

Project Description

Today electric generating companies are in critical need of information about mercury-control strategies. Regulations on the control of mercury emissions from power plants may be required, following the findings of the Environmental Protection Agency's studies mandated under Title III of the 1990 Clean Air Act Amendments.

Responding to this need, the U.S. Department of Energy is investigating the injection of dry carbon-based sorbents for the control of elemental and speciated forms of mercury. With the start-up of a pilot-scale test facility located at the Public Service Company of Colorado (PSCO)'s Comanche Station, data has been collected on this technology.

Researchers working with a slipstream of the Comanche facility will assess the capture of mercury during the injection of the sorbents under a variety of different utility configurations. The versatility of the facility allows for testing under different flue gas conditions, representing conditions typical in the electric utility industry. Sorbents will be tested in five primary configurations: pulse-jet baghouse, reverse-gas baghouse, electrostatic precipitator, the TOXICON system, and no-flyash baghouse.

A real-time mercury analyzer aids in evaluating the amount of mercury captured by the dry carbon-based sorbents. This analyzer is capable of monitoring both elemental and speciated forms of mercury, providing nearly instantaneous data on mercury capture under each configuration. A second phase of this jointly funded project will go on to test the most promising sorbents.

Program Goal

To meet its commitment to develop power systems that are at least 10 times cleaner than those in operation today, the DOE created the Air Toxics and Fine Particulate Emissions-Control program. The goal of this program is to facilitate the development of existing technologies for the control of hazardous air pollutants such as mercury. The Public Services Company of Colorado project will play a significant part in the achievement of this goal, as it will make available to the Nation's electric power utilities an efficient, economical technology with which to control their emissions of mercury.

PRIMARY PROJECT PARTNERS

**Public Service Company
of Colorado (PSCO)**
Denver, CO

MAIN SITE

Comanche Station
Pueblo, CO

TOTAL ESTIMATED COST

\$2,730,000

COST SHARING

DOE	\$2,184,300
Non-DOE	\$546,000

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CONTACT POINTS

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Project Partners

ELECTRIC POWER RESEARCH INSTITUTE

Palo Alto, CA
(cosponsorship and expertise)

ADA TECHNOLOGIES INC.

Englewood, CO
(operations and expertise)

Project Benefits

Before 1990, coal-burning utilities were exempt from air toxics regulation. It was thought that particulate collection devices captured most air toxics. Then following the first-ever comprehensive data-collection effort, conducted jointly by the DOE, the Environmental Protection Agency (EPA), and electric utilities, the EPA was charged with responsibility of assessing the health risks associated with the emissions of 189 hazardous air pollutants. Utilities may expect new and stringent regulations to restrict the emissions of mercury and other hazardous air pollutants in order to protect public health and the environment.

In an effort to provide the technology needed to meet these imminent restrictions, the Department has joined forces with Public Service Company of Colorado and ADA Technologies Inc, to investigate and demonstrate a sorbent mercury-control technology at a pilot-scale test facility. Building on prior investigations of carbon-based sorbents, this project offers the following key benefits:

- Evaluation of various carbon-based sorbents in a versatile facility capable of representing conditions of the electric utility industry.
- Use of a real-time analyzer to deliver speedy results in the measurement of both elemental and speciated forms of mercury.
- Delivery to a broad range of electric utilities a control option for meeting the pending mercury-emissions regulations.

Cost Profile

(Dollars in Thousands)

Department of Energy*

Private Sector Partners

Prior Investment	FY95	FY96	FY97	Future Funds
—	\$448	\$50	\$319.3	\$1,367
—	—	\$102.3	\$102	\$341.7

* Appropriated Funding

Key Milestones

FY96	FY97	FY98
Cooperative Agreement		Testing
Sorbent selection 4/96		Testing begins 6/96
		Final report 9/97
Phase II selection 10/97		